

Claims

1. A radially expandable vessel support having a multitude of zigzag shaped annular elements (2, 3) mutually connected in a flexible way, defining a vessel support (1) with a proximal and a distal end and a longitudinal axis, where said zigzag shaped annular elements (2, 3) are arranged side by side across said longitudinal axis, characterized in that zigzag shaped annular elements (2, 3) are linked, respectively, to at least one more of said zigzag shaped annular elements by means of at least one bending element which consists either of a pair of bars (4, 5) which are bow shaped, curved in opposing directions and located on opposite sides of the circumference, or of a pair of S-shaped bars (20, 21).
2. A radially expandable vessel support according to claim 1 characterized in that one zigzag shaped annular element (2, 3) is linked, respectively, to at least one more of said zigzag shaped annular elements by means of at least one star shaped segment (6) formed by bow shaped bars (4, 5) arranged in pairs.
3. A radially expandable vessel support according to claim 1 or 2, characterized in that at least one vertical zigzag shaped annular element (2, 3) consisting of 3, 6 or a multiple of 3 bows (7, 8) is linked, respectively, to one further annular element (3, 2) that has been mirrored on the transverse axis (11), said link being made, on every third bow, by means of opposing bow shaped bars (4, 5) mirrored on the longitudinal axis (10).
4. A radially expandable vessel support according to one of the claims 1 to 3, characterized in that the width of the bow shaped bars (4, 5) or the S-shaped bars (20, 21) is between 10% and 50%, preferably 30%, smaller than the width of the bars (9) of the zigzag shaped annular elements (2, 3).
5. A radially expandable vessel support according to one of the claims 1 to 4, characterized in that the zigzag shaped annular elements (2, 3) are made round at the ends, respectively, such as to give them a bow shape (7, 8).

6. A radially expandable vessel support according to one of the claims 1 to 5, characterized in that the width of the zigzag shaped annular elements (2, 3) is larger in the range of the bows (7, 8) than in the range of the bars (9).

7. A radially expandable vessel support according to one of the claims 1 to 6, characterized in that the width of the bars (9) of the zigzag shaped annular elements (2, 3) and / or of the bow shaped bars (4, 5) is larger at the proximal and distal ends than in the central region of the vessel support.

8. A radially expandable vessel support according to one of the claims 1 to 7, characterized in that the width and / or the cross section of the bars (9) and / or of the bows (7, 8) of the zigzag shaped annular elements (2, 3) and / or of the bow shaped bars (4, 5), and therewith also the radial force, is larger in the central region of the vessel support than at its proximal and distal ends.

9. A radially expandable vessel support according to one of the claims 1 to 3, characterized in that the star shaped segments (6) that occur between adjacent zigzag shaped annular elements (3, 2) are arranged, respectively, in a sidewise displaced fashion (Fig. 1).

10. A radially expandable vessel support according to one of the claims 1 to 3, characterized in that the star shaped segments (6) between the zigzag shaped annular elements (2, 3) are arranged, respectively, in a fashion where they are displaced sidewise and stacked contiguously above one another (Fig. 3).

11. A radially expandable vessel support according to one of the claims 1 to 7, characterized in that the star shaped segments (6) between the zigzag shaped annular elements (2, 3) are arranged sidewise among one another at an oblique angle in the shape of a spiral (Fig. 5).

12. A radially expandable vessel support according to claim 9 or 10, characterized in that several annular elements (2, 3) linked by star shaped segments (6) form a sector (12) which is linked to one or several sectors (13) only by means of two

each of bow shaped bars (25) which are arranged on diametrical positions of the circumference.

13. A radially expandable vessel support according to claim 9 or 10, characterized in that several annular elements (2, 3) linked by star shaped segments (6) form a sector (12) which is linked to one or several further sectors (13) only by means of two or several S-shaped bars (26) which are arranged on diametrical positions of the circumference.

14. A radially expandable vessel support according to one of the claims 1 to 13, characterized in that between the annular elements (3, 2) which are stacked sidewise, bow shaped bars are arranged adjacently as bending elements or pairs, respectively, which are displaced by about 90 degrees, respectively, with regard to the cross section of said vessel support (1).

15. A radially expandable vessel support according to one of the claims 1 to 14, characterized in that between the annular elements (3, 2) which are stacked sidewise, pairs of diametrical bow shaped bars (4, 5), acting as bending elements, are arranged which are displaced sidewise at an oblique angle to the previous pair of bow shaped bars (4, 5) (Fig. 11) such that the bow shaped bars (4, 5) of the vessel support (1) exhibit the overall shape of a double helix.

16. A radially expandable vessel support according to claim 14 or 15, characterized in that, alternating between the annular elements (2, 3), a bending element is formed by a pair of bow shaped bars (4, 5) which are located diametrically on the circumference and whose apertures show into the same direction, and a pair of S-shaped bars (21) is arranged, respectively, sidewise with a displacement angle of about 90 degrees with regard to the cross section of the vessel support (1).

17. A radially expandable vessel support according to one of the claims 1 to 16, characterized in that it is essentially made of one or several of the metals of the group steel, tantalum, titanium, niobium, platinum, or of an alloy consisting of at least one of these metals and at least one further metal.

18. A radially expandable vessel support according to one of the claims 1 to 17, characterized in that it is made of a nickel-titanium alloy which has been made self expanding by a heat treatment.

19. A radially expandable vessel support according to one of the claims 1 to 16, characterized in that it is made from a resorbable material, preferably a plastic.

20. A radially expandable vessel support according to one of the claims 1 to 19, characterized in that it is coated with a biocompatible material.

21. A radially expandable vessel support according to one of the claims 1 to 20, characterized in that it is permanently coated with suitable medicaments to avoid intimal hyper proliferation of the vascular wall.

22. A radially expandable vessel support according to one of the claims 1 to 20, characterized in that the coating will slowly release the medicaments suitable to avoid intimal hyper proliferation of the vascular wall.

23. A radially expandable vessel support according to one of the claims 1 to 20, characterized in that the coating will, by way of irradiation or radioactive decay, release radioactive radiation to avoid or reduce intimal hyper proliferation of the vascular wall.

24. A radially expandable vessel support according to one of the claims 1 to 23, characterized in that it is equipped with a biocompatible fabric made of polyurethane, silicone, Teflon, or polyester, or with a thin foil made of one of these materials.